Serial No.: 10/763,825

Claim Listing:

1. (Original) A medical device comprising (a) an elongate body adapted for insertion into a body lumen, said elongate body having distal and proximal ends and an axis; and (b) an active region comprising a conductive polymer disposed over the elongate body such that the medical device is expanded in at least one radial dimension relative to said axis upon volumetric expansion of the active region.

2. (Original) The medical device of claim 1, wherein said device comprises two or more active regions.

3. (Original) The medical device of claim 1, wherein said active region expands in at least one radial dimension.

4. (Original) The medical device of claim 1, wherein a deformable region is expanded in said at least one radial dimension upon volumetric expansion of said active region.

5. (Original) The medical device of claim 1, wherein said active region surrounds said elongate body in the form of a circumferential band.

6. (Original) The medical device of claim 1, wherein said active region is provided in the form of a longitudinal strip.

7. (Original) The medical device of claim 1, wherein said active region is provided at the distal end of said device, and wherein said active region increases in thickness with increasing distance from the distal tip of the device.

8. (Original) The medical device of claim 7, wherein said active region comprises a series of circumferential bands that increase in thickness with increasing distance from the distal tip of the device.

9. (Original) The medical device of claim 1, wherein said active region is disposed in a recess formed in the elongate body.

10. (Original) The medical device of claim 9, wherein recess is a circumferential recess.

11. (Original) The medical device of claim 9, wherein recess is a longitudinal recess.

12. (Original) The medical device of claim 1, said medical device is a catheter.

13. (Original) The medical device of claim 12, wherein said active region is provided at a distal end of said catheter.

14. (Original) The medical device of claim 13 wherein said catheter is a guide catheter.

15. (Original) The medical device of claim 12, wherein said catheter is a balloon catheter.

16. (Original) The medical device of claim 15, wherein one or more active regions are disposed such that, upon expansion of the one or more active regions, at least a portion of the balloon is expanded from a first position to a second position that is radially beyond the first position.

17. (Original) The medical device of claim 1, wherein said medical device is a guidewire.

18. (Original) The medical device of claim 17, wherein said active region is provided at the distal end of said guidewire.

19. (Original) The medical device of claim 18, wherein the distal end of said guidewire is flattened.

20. (Original) The medical device of claim 1, wherein said medical device comprises a cutting blade that is adapted to engage tissue of a surrounding lumen upon insertion of said device and expansion of said active region.

21. (Original) The medical device of claim 20, wherein said medical device comprises two or more cutting blades.

22. (Original) The medical device of claim 20, wherein said cutting blade is sheathed prior to expansion of said active region.

23. (Original) The medical device of claim 20, wherein said cutting blade is provided with a diamond cutting edge.

24. (Original) The medical device of claim 1, wherein one or more active regions are disposed such that at least a portion of the length of said medical device is stiffened upon expansion of the one or more of said active regions.

25. (Original) The medical device of claim 24, wherein one or more of said active regions circumferentially surround the elongate body.

26. (Original) The medical device of claim 24, wherein said medical device is a guidewire.

27. (Original) The medical device of claim 24, wherein said medical device is guide catheter.

28. (Original) A medical device comprising (a) an elongate body adapted for insertion into a body lumen, said elongate body having distal and proximal ends and an axis; (b) a balloon; and (c) an active region comprising an electroactive polymer, said active region being adapted to radially advance at least a portion of the balloon when the balloon is in a substantially uninflated state.

29. (Original) The medical device of claim 28, wherein said balloon is positioned over at least a portion of said active region.

30. (Original) The medical device of claim 28, wherein said active region is adapted to radially advance a proximal portion of said balloon.

31. (Original) The medical device of claim 28, wherein said active region is adapted to radially advance proximal and distal portions of said balloon.

32. (Original) The medical device of claim 28, wherein said active region is adapted to radially advance proximal, central and distal portions of said balloon.

33. (Original) The medical device of claim 28, wherein said medical device further comprises a stent disposed over said balloon.

34. (Original) The medical device of claim 28, wherein at least a portion of the balloon is radially advanced directly by the volumetric expansion of the active region.

35. (Original) The medical device of claim 28, wherein at least a portion of the balloon is radially advanced by a passive deformable region, said passive deformable region expanding in at least one radial dimension upon volumetric expansion of said active region.

36. (Original) The medical device of claim 28, wherein said active region surrounds said elongate body in the form of a circumferential band.

37. (Original) The medical device of claim 28, wherein said active region is provided over said elongate body in the form of a longitudinal member.

38. (Original) The medical device of claim 28, wherein said active region is disposed in a recess formed in said elongate body.

39. (Original) The medical device of claim 28, wherein said medical device comprises a curvilinear member, and said active region is adapted to radially expand and contract said curvilinear member.

40. (Original) The medical device of claim 39, wherein said curvilinear member is a spiral member.

41. (Original) The medical device of claim 40, wherein said spiral member originates from and wraps around said elongate member.

42. (Original) The medical device of claim 40, wherein said spiral member comprises said active region disposed on a conductive material

43. (Original) A method comprising: (a) inserting the medical device of claim 28 into a body lumen, (b) volumetrically expanding said active region such that at least a portion of the balloon is radially advanced to a first position while in a substantially uninflated state; and (c) inflating said balloon such that said balloon is radially advanced from said first position to a second position that is radially beyond the first position.

44. (Original) An aneurysm filler coil comprising: an elongate conductive region; and an active region comprising an electroactive polymer, said active region and said conductive region being disposed such that the device becomes more tightly coiled upon disconnection from a source of electrical potential.

45. (Original) The aneurysm filler coil of claim 44, wherein the active region is disposed along the length of the elongate conductive region.

46. (Original) The aneurysm filler coil of claim 45, wherein the active region is disposed along one side of the conductive region

47. (Original) The aneurysm filler coil of claim 45, wherein the active region forms a spiral around the conductive region.

48. (Original) The aneurysm filler coil of claim 44, wherein the elongate conductive region comprises gold or platinum.

49. (Original) The aneurysm filler coil of claim 44, wherein the active region comprises polypyrrole.

50. (Original) A medical device comprising: (a) an insertable body adapted for insertion into a body lumen of a patient; (b) a device lumen within said insertable body; and (c) one or more electrically actuated members disposed along at least a portion of the length of said device lumen, said one or more electrically actuated members being adapted to transform at least a portion of the length of said device lumen between (i) an expanded state and (ii) a contracted state in which said insertable body more readily inserted into said body lumen of said patient.

51. (Original) The medical device of claim 50, wherein said one or more electrically actuated members extend along the entire length of the device lumen.

52. (Original) The medical device of claim 50, wherein said one or more electrically actuated members extend along only the insertable length of said device lumen.

53. (Original) The medical device of claim 50, wherein the cross-sectional area of said lumen in said expanded state is at least 25% greater than the cross-sectional area of said lumen in said contracted state

54. (Original) The medical device of claim 50, wherein said one or more electrically actuated members are electroactive polymer actuators.

55. (Original) The medical device of claim 50, wherein said or more electrically actuated members are piezoelectric actuators.

56. (Original) The medical device of claim 50, wherein said medical device comprises a single electrically actuated member.

57. (Original) The medical device of claim 50, wherein said medical device comprises a plurality of electrically actuated members.

58. (Original) The medical device of claim 50, wherein said one or more electrically actuated members contain regions of narrowed cross-section, thereby increasing flexibility along the length of said device lumen.

59. (Original) The medical device of claim 50, wherein said one or more electrically actuated members are adapted to bend or unbend in response to an applied voltage.

60. (Original) The medical device of claim 50, wherein said one or more electrically actuated member are disposed between the device lumen and the exterior of said device.

61. (Original) The medical device of claim 60, wherein said one or more electrically actuated members are disposed within said insertable body.

62. (Original) The medical device of claim 60, wherein said one or more electrically actuated members are disposed on an outside surface of said insertable body

63. (Original) The medical device of claim 50, wherein said insertable body is an extruded body.

64. (Original) The medical device of claim 50, further comprising an inflatable balloon, wherein the interior of said balloon is in fluid communication with said device lumen.

65. (Original) The medical device of claim 64, further comprising a guidewire lumen.

66. (Original) The medical device of claim 64, wherein said medical device comprises multiple device lumens.

67. (Original) The medical device of claim 50, wherein said medical device is a stent.

68. (Original) The medical device of claim 50, wherein said stent comprises a plurality of stent windows.

69. (Original) The medical device of claim 22, wherein said cutting blade is sheathed in a protective body comprising a depression from which the cutting blade emerges upon expansion of said active region.

70. (Original) The medical device of claim 22, wherein said cutting blade is sheathed in a lumen comprising an aperture through which the cutting blade emerges upon expansion of said active region.

71. (Original) The medical device of claim 4, wherein said deformable region is an elongated flexible material.

72. (Original) The medical device of claim 4, wherein said deformable region is an elastic region.

73. (Original) The medical device of claim 24, wherein said medical device is stiffened upon radial expansion of said one or more of said active regions.

74. (Original) The medical device of claim 24, wherein said medical device is stiffened upon longitudinal expansion of said one or more of said active regions.

75. (Original) The medical device of claim 74, wherein said one or more of said active regions engage each other upon longitudinal expansion.

76. (Original) The medical device of claim 74, wherein said one or more of said active regions engage a region of rigid material upon longitudinal expansion.

77. (Original) The aneurysm filler coil of claim 45, wherein two active regions are disposed on opposite sides of the conductive region.

78. (Original) The medical device of claim 50, wherein said one or more electrically actuated members are adapted to coil or uncoil in response to an applied voltage.

79. (Original) The medical device of claim 50, wherein said one or more electrically actuated members are electrostrictive actuators.

80. (Original) The medical device of claim 24, wherein said medical device is balloon catheter.